

Claims:

1. A process for making a toothbrush head of the type comprising at least two
5 sections widthways adjacent to each other on opposite sides of a toothbrush longitudinal direction, the sections being flexibly integrally linked to each other, the process comprising the stages:
firstly making the head in an injection moulding process with the sections flexibly integrally linked to each other and relatively spaced apart from each other in a
10 widthways direction,
secondly moving the sections of the so formed head relatively closer to each other in a widthways direction.
2. A process according to claim 1 wherein the sections are made in the form of a
15 head part adapted to carry bristles and a neck part via which the section is integrally linked to the toothbrush handle and consequently to each other.
3. A process according to claim 2 wherein when the sections are moved
relatively closer together a distortion of the integral link occurs at the junction
20 between the head part of the section and the neck part, at the junction between the neck part and the handle, or at any other position of the neck part.
4. A process according to any one of claims 1 to 3 wherein in the first stage of
the process the sections are spaced apart with their respective longitudinal directions
25 diverging with increasing longitudinal distance of the section from the handle and then in the second stage of the process the sections are moved relatively closer to each other in a widthways direction so that as a result their respective longitudinal directions are parallel.
- 30 5. A process according to any one of the preceding claims wherein the sections are spaced apart in a direction perpendicular to the bristle direction.
6. A process according to any one of the preceding claims wherein the sections are spaced apart in a direction parallel to the bristle direction.

7. A process according to any one of the preceding claims wherein the longitudinal directions of three or more sections are spaced apart so that they diverge about a solid angle.

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8. A process according to any one of claims 2 to 7 wherein the neck parts are made relatively spaced apart from each other in a widthways direction and the neck parts are also then moved relatively closer together to each other.

10 9. A process according to any one of the preceding claims wherein after the sections are moved closer together they are separated by a widthways gap of less than 0.5mm.

15 10. A process according to claim 9 wherein after the sections are moved closer together they are in sliding contact with each other.

11. A process according to any one of the preceding claims wherein the toothbrush head is made of a thermoplastic material and the sections are moved closer together with the material in a hot malleable state.

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12. A process according to claim 11 wherein the material is provided in such a hot malleable state by making the head from a hot fluid plastic material using an injection moulding process and performing the moving of sections closer together shortly after the head has been removed from the mould so that the material is still in a hot
25 malleable state after the injection moulding stage.

13. A process according to any one of claims 1 to 11 wherein the material is provided in such a hot malleable state by heating the head to render the material malleable.

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14. A process according to any one of the preceding claims wherein after the sections have been moved closer together they are fixed in this closer together relationship.

15. A process according to claim 14 wherein the sections are moved closer together with the material in a hot malleable state and the sections are fixed in this relationship by cooling the material or allowing the material to cool after the sections have been moved closer together.

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16. A process according to claim 14 or 15 wherein the sections are fixed by injecting a second fluid plastic material around and/or between a part of the sections and causing or allowing this second fluid material to set to thereby hold the sections in their closer together relationship.

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17. A process according to claim 16 wherein the sections are fixed by injecting a second fluid plastic material around and/or between a part of a flexible neck part and causing or allowing this second fluid material to set to thereby hold the sections in their closer together relationship.

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18. A process according to claim 17 wherein the sections are fixed by injecting the second fluid plastic material between a part of the sections being a region of a flexible neck part adjacent to the grip handle, and causing or allowing this second fluid material to set to thereby fix the sections in their closer together relationship.

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19. A process according to claim 17 or 18 wherein, in the first stage of the process a toothbrush skeleton is made having the sections in the spaced widthways further apart configuration

20. A process according to claim 19 wherein the skeleton has one or more void in its structure defining the shape and position of an intended second material part into which a second fluid plastic material may be injected, and said void comprises or be in communication with a gap between said sections.

21. A process according to any one of claims 16 to 20 wherein the second plastic material is a plastics material.

22. A process according to any one of claims 16 to 20 wherein the second plastic material is a thermoplastic elastomer material.

23. A toothbrush head as a product of a process according to any one of claims 1 to 22.

5 24. An apparatus for performing a process according to any one of claims 1 to 22 comprising:

an injection moulding means adapted to make a toothbrush head of the type comprising at least two sections widthways adjacent on opposite sides of a toothbrush longitudinal direction, with the sections flexibly integrally linked to each other and
10 relatively spaced apart in a widthways direction;

and means to move the sections of the so formed head relatively closer.

25. An apparatus adapted to be supplied with a toothbrush head of the type comprising at least two sections widthways adjacent on opposite sides of a toothbrush longitudinal direction, the sections being flexibly integrally linked to each other, with
15 the sections flexibly integrally linked to each other and relatively spaced apart in a widthways direction, the apparatus being adapted to move the sections of the head relatively closer together.

20 26. An apparatus according to claim 25 adapted to receive a skeleton of a toothbrush which comprises said sections, the apparatus comprising first and second part moulds which can mate together and which incorporate first and second part mould cavities which when the first and second part moulds have mated together form a mould cavity capable of receiving at least part of the skeleton, and the apparatus
25 incorporates one or more abutment surface positioned relative to the apparatus such that as the part of the skeleton and a part mould cavity relatively come together, one or more abutment surface abuts against at least one of the sections to urge the sections into the closer spaced together relationship.

30 27. An apparatus according to claim 26 wherein an abutment surface is provided by one or more of the part mould cavities having a ramp profiled abutment surface so that as a section is received by the part mould cavity, the ramp profiled surface abuts against the section to urge the section toward the closer spaced together relationship.

28. An apparatus according to claim 26 or 27 wherein an abutment surface is provided by a mould cavity capable of receiving the grip handle part and the neck part of the sections immediately adjacent to the grip handle part, but such that the head part of the section and the neck part of the section adjacent the head part extend
5 outside of the part mould cavity, and an abutment surface is outside of a part mould cavity and positioned so that a section and the abutment surface may be brought into contact before the part moulds mate so that the abutment surface abuts against the section to urge the section toward the closer spaced together relationship.
- 10 29. An apparatus according to claim 28 wherein an abutment surface is rigidly connected to or part of a part mould, and extend across the mould split line.
30. An apparatus according to claim 29 wherein an abutment surface is positioned such that the abutment surface abuts against the section as the skeleton is received by
15 a part mould cavity.